REMARKS

Claims 1-33 are now pending in the application. The remaining non-elected claims are withdrawn. The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the remarks contained herein.

REJECTION UNDER 35 U.S.C. § 102

Claim 1 stands rejected under 35 U.S.C. § 102(a) as being anticipated by Chae in the article "A Protected Optical Star-Shaped Ring Network Using an N x N Arrayed Waveguide Grating and Incoherent Light Sources" (hereinafter referred to as "Chae"). This rejection is respectfully traversed.

Chae relates generally to an optical ring network. However, Chae et al. do not disclose or suggest such logical-ring transmission path(s) of the invention as recited in Claim 1 (hereinafter referred to as "the present invention"). In addition, as will be explained in detail below, Chae is unable to form such logical-ring transmission path(s).

In a wire center shown in FIG. 1 of Chae, only a part of ports A1-A8 of an NxN AWG is allowed to input or output optical signals (see, for example, FIG. 1 and page 878, right column, lines 3-6 and lines 13-16). Specifically, optical signals output from the port A2 are input to only the port A3. When a 1xM switch is turned on, optical signals output from the port A5 are input to only one of any of the ports A1 and A6-A8. When the switch is turned off, none of optical signals output from the port A5 are input to any of the ports A1 and A6-A8.

Next, networks that can be configured by Chae will be explained below. The explanation will make reference to a set of Tables I and V, and explanatory Figures A-F, which are attached hereto as part of this response. The Tables and Figures are for explanation purposes, to aid in understanding the applicants' arguments below:

a) A2-A3 wavelength routing

Table I (a) shows the wavelengths used between the ports A2-A3 and ports B1-B8 when the switch is turned off and thus optical signals are routed only through the ports A2-A3. This table can be derived from the cyclic input-output characteristics of the N×N AWG, and the recitation that optical signals having wavelength $\lambda 2$ and $\lambda 5$ are respectively output from the ports A2 and A5, which shows that optical signals having the other wavelengths $\lambda 1$, $\lambda 3$, $\lambda 4$, and $\lambda 6$-$\lambda 8$ are respectively output from the ports A1, A3, A4, and A6-A8 (see page 878, right column, lines 2-3 and 21-26).

Table 1

A2-A3 Wavelength Routing

(a)

	B1	B2	B3	B4	B5	B6	B7	B8
A1								
A2	λ2	λ3	λ4	λ5	λ6	λ7	λ8	λ1
A3	λ3	λ4	λ5	λ6	λ7	λ8	λ1	λ2
A4								
A5								
A6								
A7								
A8								

Fixed →

(b)

| Start Node		Used Wavelength		Arrival Node
N1	→	λ2	→	N8
N2	→	λ3	→	N1
N3	→	λ4	→	N2
N4	→	λ5	→	N3
N5	→	λ6	→	N4
N6	→	λ7	→	N5
N7	→	λ8	→	N6
N8	→	λ1	→	N7

Fixed Ring Network

Table I (b) shows the wavelengths used between start nodes which transmit optical signals and arrival nodes at which the optical signals arrive. Please note that the ports B1-B8 are respectively connected to nodes 1-8 shown in FIG. 2 (a) of Chae (see page 878, right column, lines 21-23). For example, when a start node is the node 1 which is connected to the port B1, the wavelength λ2 is used, and an optical signal having the wavelength λ2 is output from the port A2 and is input to the port A3. Since the wavelength λ2 is used, this optical signal is output to the port B8 and thus it is output to the node 8 which is connected to the port B8. Thus, a route of node 1→8 is established. Similarly, when start nodes are nodes 2-8, wavelengths λ3-λ8 and λ1 are respectively used, and routes of node 2→1, 3→2, 4→3, 5→4, 6→5, 7→6, and 8→7 are respectively established.

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As a result, the fixed ring network shown in FIG. A is configured. This fixed ring network is shown in FIG. 2 (a) of Chae.

FIG. A

Fixed Ring Network by A2-A3 Wavelength Routing
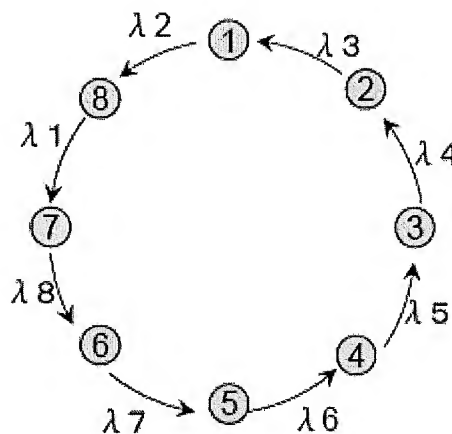
b) A5-(switched A1) wavelength routing

Table II (a) shows the wavelengths used between the ports A1-A3 and A5 and the ports B1-B8 when the switch is turned on and optical signals are routed through the ports A2 and A3 and through the ports A5 and A1. Table II (b) is the same as Table I (b), which shows the routes that are established by the A2-A3 wavelength routing. Table II (c) shows the routes that are established by A5-(switched A1) wavelength routing. As a result, the networks shown in FIG. B, in addition to the fixed ring network shown in FIG. A, are configured.

Table II

A5-(switched A1) Wavelength Routing

(a)

	B1	B2	B3	B4	B5	B6	B7	B8
A1	λ1	λ2	λ3	λ4	λ5	λ6	λ7	λ8
A2	λ2	λ3	λ4	λ5	λ6	λ7	λ8	λ1
A3	λ3	λ4	λ5	λ6	λ7	λ8	λ1	λ2
A4								
A5	λ5	λ6	λ7	λ8	λ1	λ2	λ3	λ4
A6								
A7								
A8								

Fixed

Additional

(c)

(b)

Fixed Ring Network

Start Node		Used Wavelength		Arrival Node
N1	→	λ2	→	N8
N2	→	λ3	→	N1
N3	→	λ4	→	N2
N4	→	λ5	→	N3
N5	→	λ6	→	N4
N6	→	λ7	→	N5
N7	→	λ8	→	N6
N8	→	λ1	→	N7

Additional Networks

Start Node		Used Wavelength		Arrival Node
N1	→	λ5	→	N5
N2	→	λ6	→	N6
N3	→	λ7	→	N7
N4	→	λ8	→	N8
N5	→	λ1	→	N1
N6	→	λ2	→	N2
N7	→	λ3	→	N3
N8	→	λ4	→	N4

FIG. B

Additional Networks by A5-(switched A1) Wavelength Routing

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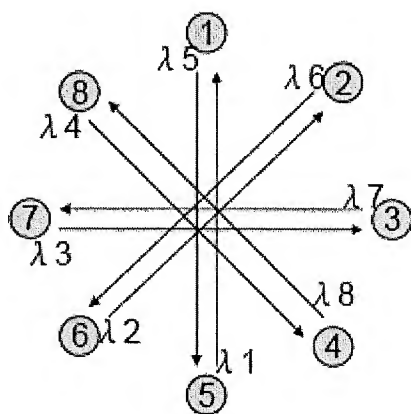
c) A5-(switched A6) wavelength routing

Table III (a) shows the wavelengths used between the ports A2, A3, A5, and A6 and the ports B1-B8 when the switch is turned on and optical signals are routed through the ports A2 and A3 and through the ports A5 and A6. Table III (b) is the same as Table I (b). Table III (c) shows the routes that are established by A5-(switched A6) wavelength routing. As a result, the additional ring network shown in FIG. C, in addition to the fixed ring network shown in FIG. A, are configured.

Table III

A5-(switched A6) Wavelength Routing

(a)

	B1	B2	B3	B4	B5	B6	B7	B8
A1								
A2	λ2	λ3	λ4	λ5	λ6	λ7	λ8	λ1
A3	λ3	λ4	λ5	λ6	λ7	λ8	λ1	λ2
A4								
A5	λ5	λ6	λ7	λ8	λ1	λ2	λ3	λ4
A6	λ6	λ7	λ8	λ1	λ2	λ3	λ4	λ5
A7								
A8								

Fixed

Additional

(c)

(b)

Start Node		Used Wavelength		Arrival Node
N1	→	λ2	→	N8
N2	→	λ3	→	N1
N3	→	λ4	→	N2
N4	→	λ5	→	N3
N5	→	λ6	→	N4
N6	→	λ7	→	N5
N7	→	λ8	→	N6
N8	→	λ1	→	N7

Start Node		Used Wavelength		Arrival Node
N1	→	λ5	→	N8
N2	→	λ6	→	N1
N3	→	λ7	→	N2
N4	→	λ8	→	N3
N5	→	λ1	→	N4
N6	→	λ2	→	N5
N7	→	λ3	→	N6
N8	→	λ4	→	N7

Fixed Ring Network

Additional Ring Network

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FIG. C

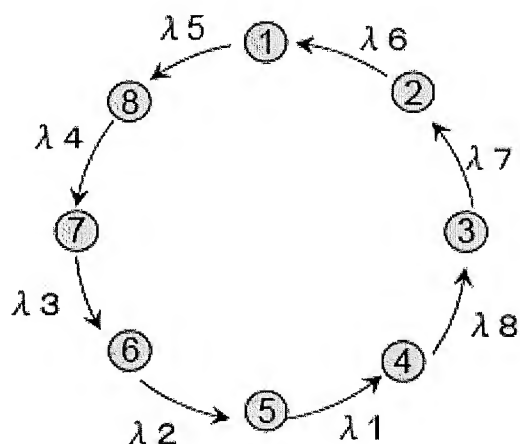## Additional Ring Network by A5-(switched A6) Wavelength Routing

d) A5-(switched A7) wavelength routing

Table IV (a) shows the wavelengths used between the ports A2, A3, A5, and A7 and the ports B1-B8. Table IV (b) is the same as Table I (b). Table IV (c) shows the routes that are established by A5-(switched A7) wavelength routing. As a result, the networks shown in FIG. D, in addition to the fixed ring network shown in FIG. A, are configured. This fixed ring network is also shown in FIG. 2 (a) of Chae.

Table IV

A5-(switched A7) Wavelength Routing

(a)

	B1	B2	B3	B4	B5	B6	B7	B8
A1								
A2	λ2	λ3	λ4	λ5	λ6	λ7	λ8	λ1
A3	λ3	λ4	λ5	λ6	λ7	λ8	λ1	λ2
A4								
A5	λ5	λ6	λ7	λ8	λ1	λ2	λ3	λ4
A6								
A7	λ7	λ8	λ1	λ2	λ3	λ4	λ5	λ6
A8								

Fixed

Additional

(c)

(b)

Start Node		Used Wavelength		Arrival Node
N1	→	λ2	→	N8
N2	→	λ3	→	N1
N3	→	λ4	→	N2
N4	→	λ5	→	N3
N5	→	λ6	→	N4
N6	→	λ7	→	N5
N7	→	λ8	→	N6
N8	→	λ1	→	N7

Start Node		Used Wavelength		Arrival Node
N1	→	λ5	→	N7
N2	→	λ6	→	N8
N3	→	λ7	→	N1
N4	→	λ8	→	N2
N5	→	λ1	→	N3
N6	→	λ2	→	N4
N7	→	λ3	→	N5
N8	→	λ4	→	N6

Fixed Ring Network   Additional Networks

FIG. D

Additional Networks by A5-(switched A7) Wavelength Routing

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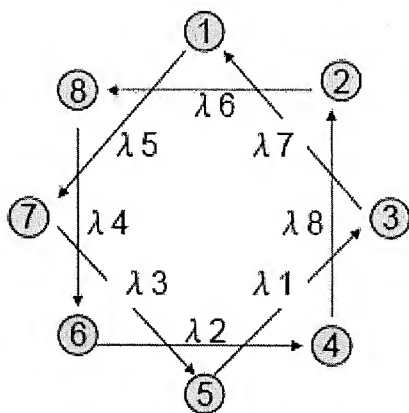
e) A5-(switched A8) wavelength routing

Table V (a) shows the wavelengths used between the ports A2, A3, A5, and A8 and the ports B1-B8. Table V (b) is the same as Table I (b). Table V (c) shows the routes that are established by A5-(switched A8) wavelength routing. As a result, the networks shown in FIG. E, in addition to the fixed ring network shown in FIG. A, are configured.
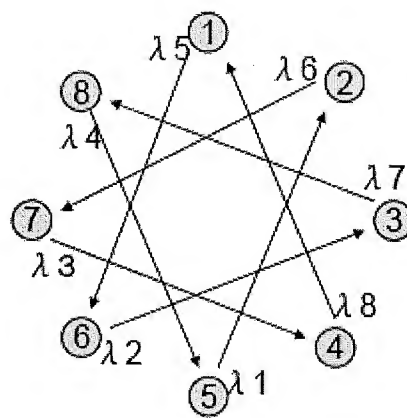
Table V

A5-(switched A8) Wavelength Routing

(a)

	B1	B2	B3	B4	B5	B6	B7	B8
A1								
A2	λ2	λ3	λ4	λ5	λ6	λ7	λ8	λ1
A3	λ3	λ4	λ5	λ6	λ7	λ8	λ1	λ2
A4								
A5	λ5	λ6	λ7	λ8	λ1	λ2	λ3	λ4
A6								
A7								
A8	λ6	λ1	λ2	λ3	λ4	λ5	λ6	λ7

Fixed

Additional

(b)

Start Node		Used Wavelength		Arrival Node
N1	→	λ2	→	N8
N2	→	λ3	→	N1
N3	→	λ4	→	N2
N4	→	λ5	→	N3
N5	→	λ6	→	N4
N6	→	λ7	→	N5
N7	→	λ8	→	N6
N8	→	λ1	→	N7

Fixed Ring Network

(c)

| Start Node		Used Wavelength		Arrival Node
N1	→	λ5	→	N6
N2	→	λ6	→	N7
N3	→	λ7	→	N8
N4	→	λ8	→	N1
N5	→	λ1	→	N2
N6	→	λ2	→	N3
N7	→	λ3	→	N4
N8	→	λ4	→	N5

Additional Networks

60

FIG. E

Additional Networks by A5-(switched A8) Wavelength Routing

In order to configure a ring network in which an optical signal circulates in a clockwise direction as shown in FIG. F, routes of node 1→2, 2→3, 3→4, 4→5, 5→6, 6→7, 7→8, and 8→1 must be established. However, as can be understood from Tables I (b), II (b)-(c), III (b)-(c), IV (b)-(c), and V (b)-(c), Chae is unable to establish any one of these routes. Therefore, unlike the present invention, it is impossible for Chae to configure a first logical-ring transmission path where an optical signal circulates in a clockwise direction, let alone both the first logical-ring transmission path and a second logical-ring transmission path where an optical signal circulates in a counterclockwise direction. In this way, the present invention would not have been anticipated from Chae.

FIG. F

Ring Network that Cannot be Configured by Chae
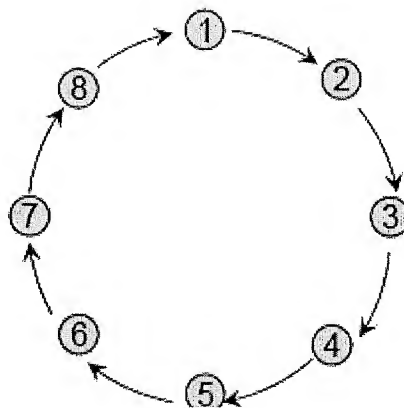
Claim 1 has been amended to clarify this distinction from Chae. Basis for these amendments may be found in throughout the application as filed, including Figure 1A and 6A. Therefore, it is respectfully submitted that Claim 1defines patentable subject matter over Chae. Accordingly, Applicant respectfully requests reconsideration and withdrawal of this rejection.

ALLOWABLE SUBJECT MATTER

The Examiner states that claims 2-32 would be allowable if rewritten in independent form. Allowable dependent Claims 2, 6, 30, and 32, which directly refer back to independent Claim 1, have been rewritten into independent form by incorporating the recitation of current Claim 1, thereby placing these claims in condition for allowance.

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CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested.

If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: MAY 5, 2008

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